

Curvothynnus gen. nov. erected for two unusual species of thynnine wasps (Hymenoptera: Thynnidae: Thynninae: Rhagigasterini)

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ABSTRACT

The genus *Curvothynnus* is erected for two unusual species previously placed in *Rhagigaster* Guérin – *R. laevigatus* Smith and *R. neptunus* Turner. In this genus the pronotum of the male is distinctive in that the anterior surface is concave with the dorsal margin sublaminated and directed forward. Both species are redescribed, the female of the latter being described for the first time. A key to species is given as is a key to Australian genera in the tribe Rhagigasterini.

KEYWORDS: Northern Australia, Thynnidae, Thynninae, Rhagigasterini, *Curvothynnus*, *Rhagigaster*.

INTRODUCTION

The genus *Rhagigaster* was erected by Guérin in 1838 for a previously undescribed species of thynnine wasp, *Rhagigaster unicolor*. The description was based on a single male which had a distinctively elongate, parallel-sided metasoma with the segments strongly depressed anteriorly and posteriorly such that the metasoma appeared filiform in profile, and the apical spine of the hypopygium was strongly upturned apically.

Since then approximately 60 additional species have been described, mostly by Turner (1907), and a further 64 are yet to be described, all with these characteristics in the male. Turner (1907) also divided the genus on the basis of the presence/absence of a transverse frontal carina below the ocelli in the male. However, this carina is often present but weakly developed and therefore difficult to interpret. As a consequence, Turner (1910) subsequently reversed this decision without considering a more elaborate grouping of species.

It is now apparent that an examination of the male genitalia is essential to detect cryptic genera and species (Brown 2008). Such an examination of all available specimens of *Rhagigaster sensu* Turner, 1910 confirms the existence of six groups that warrant generic status. These differences are also supported particularly by the microsculpture in both sexes and the shape of the last tergite of the male. These are given in more detail in the key to genera below.

This paper follows on from a revision of *Umbothynnus* Brown (2008) which was erected for *Rhagigaster alexius* (Guérin) and seven new species, and is the second in a series of generic revisions. Although, no new species of *Curvothynnus* gen. nov. are known, the two species are reviewed within a new generic context. Apart from these two

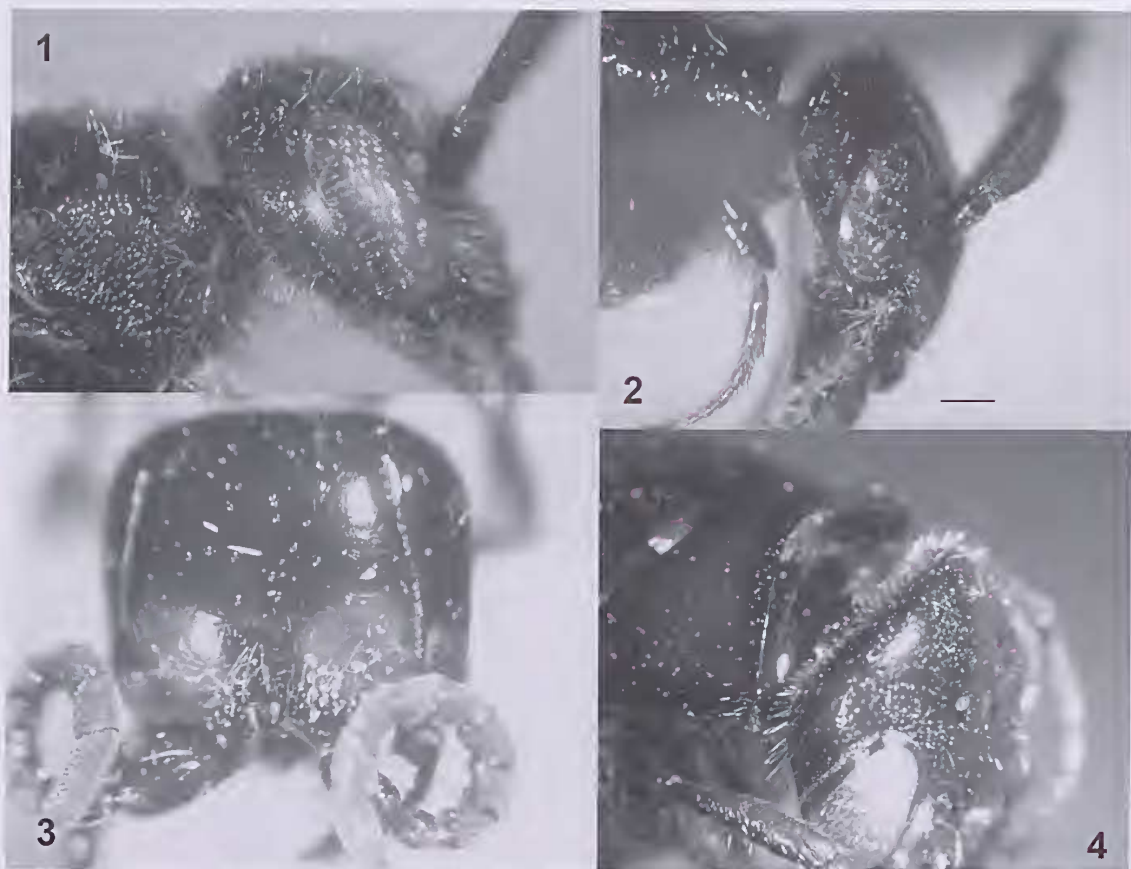
revisions, the tribe *Rhagigasterini* has not been reviewed since Turner (1910).

The biology of the genus is unknown. Like other members of the Thynninae, species of *Curvothynnus* are presumed to be idiobiont parasitoids of soil-dwelling scarab beetle larvae (that is, the adult female prevents further development of the host larva by paralysing or killing it). However, this assumption is based on less than 20 records for the more than 1000 Australian species in the entire subfamily Thynninae (Brown 2005). It is also presumed that the adults preferentially feed on the nectar of myrtaecous plants, although this is deduced from collecting records rather than testing food preferences in the field.

Terminology follows Snodgrass (1941), Nauman (1991) and Brown (1997a,b). Relative terms relating to microsculpture are interpreted as follows: sparsely punctate = punctures greater than two puncture-diameters apart; punctate = punctures at most two puncture-diameters apart, but never confluent; closely punctate = punctures almost confluent; rugosely punctate = punctures partially confluent; finely punctate = punctures small and shallow; coarsely punctate = punctures large and deep; obscurely punctate = punctures small, sparse, shallow and only visible at certain angles.

Abbreviations. Morphological characters: T1–7, metasomal tergites 1–7; S1–8, metasomal sternites 1–8.

Institutional abbreviations: AM, Australian Museum, Sydney; ANIC, Australian National Insect Collection, CSIRO, Canberra; BMNH, The Natural History Museum, London; CUO, Carlton University, Ottawa, Canada; MV, Museum Victoria, Melbourne; NSW, Primary Industry, New South Wales, Orange; NTM, Museum and Art Gallery of the Northern Territory (formerly Northern Territory Museum), Darwin; OUM, Oxford University Museum, Oxford; QDPI, Primary Industries (Queensland



Figs 1–4. *Rhagigaster lyelli* and *Curvothynnus laevigatus*, detail of heads: 1, *R. lyelli*, male; 2, *C. laevigatus*, male; 3, *R. lyelli*, female; 4, *C. laevigatus*, male head and pronotum. Scale lines: 1 = 0.4 mm; 2, 4 = 0.5 mm; 3 = 0.25 mm.

Department of Employment, Economic Development and Innovation), Indooroopilly, Brisbane; QM, Queensland Museum, Brisbane; UQIC, University of Queensland Insect Collection, St Lucia, Brisbane; WADA, Western Australian Department of Agriculture, South Perth.

SYSTEMATICS

Rhagigasterini Ashmead, 1903 (*sensu* Turner 1910)

This tribe was erected by Ashmead (1903) in a key to genera. However, it lacked description, was ambiguous, and associated unrelated genera. The tribe was redefined and formally described by Turner (1910) to include only three genera from Australia (*Rhagigaster*, *Dimorphothynnus* Turner, *Eirone* Westwood) and *Aehurns* Klug from South America.

Turner (1907) divided *Rhagigaster* when he erected *Rhytidogaster*. He later (Turner 1910) synonymised the two genera, but the genus was revived by Brown (2008) and given the replacement name *Rhytidothynnus*.

Based on the structure of the male genitalia and other characters, *Rhagigaster* Turner, 1910 comprises six species groups that warrant generic status. The majority of species belong to *Rhagigaster* or *Rhytidothynnus* and, apart from

Curvothynnus, there are two other genera yet to be described. These genera are distinguished in the following key.

This is the second paper in a series revising these genera and follows that of *Umbothynnus* Brown (2008).

Key to the Australian genera of Rhagigasterini

[Note: only one species of *Umbothynnus* is known from the female, and no attempt has been made here to separate this genus in that sex from *Rhytidothynnus*]

- | | | |
|------|--|-------------------------------|
| 1 | Male (winged) | 2 |
| — | Female (wingless) | 9 |
| 2(1) | S8 rounded, not spinose, often fringed apically with short stout setae; T7 punctate, convex, not heavily sclerotised, not earinate | <i>Eirone</i> Westwood |
| — | S8 not rounded, apically spinose; T7 variable, not simply convex, truncate or rounded apically and usually variously earinate | 3 |
| 3(2) | T7 broadly truncate apically, truncation may be marginally earinate but without other marginal carinae, rarely slightly rounded, disc flat, punctate to longitudinally multicarinate; clypeus with irregular, inverted V-shaped carina; cuspis granulate | <i>Dimorphothynnus</i> Turner |

- T7 variable, convex at least basally with apical margin and carinae more complex, never broadly truncate apically; elypeus not rugose-carinate; euspiis not granulate 4
- 4(3) Pronotum with anterior margin of disc vertically raised, often carinate and always preceded by preapical transverse groove; anterior surface of pronotum flat and vertical; head and thorax usually closely punctate to rugosely-punctate; head as in Fig. 1, vertex usually short, gena clearly visible throughout; mesoseutellum weakly curved, not strongly raised relative to, or produced over metanotum in profile [Rhagigaster sensu Turner] 5
- Pronotum with anterior margin of disc sublamellate and produced anteriorly such that anterior vertical surface is concave, preapical transverse groove on disc indistinct (Fig. 4); head and thorax sparsely punctate; head in profile as in Fig. 2, vertex long (behind eyes) long, gena mostly hidden ventrally; mesoseutellum strongly raised relative to the metanotum and slightly produced over latter (in profile) *Curvothynnus* gen. nov.
- 5(4) Tergites closely and finely setiferously punctate posterior to gradulus, setae usually forming transverse white bands; antennal prominence with strongly developed V-shaped earina; T7 with lateral carinae which are usually strongly convergent posteriorly and ending before apical margin; basiparameres strongly produced posterodorsally genus 'Z'
- Tergites not closely and finely setiferously punctate posterior to gradulus, setae not forming transverse white bands; antennal prominence variable; T7 rarely with strongly convergent lateral carinae; basiparameres not strongly produced posterodorsally 6
- 6(5) T7 produced, rounded and more or less flat apically; S8 unispinose; anterior margin of pronotum strongly produced laterally; dorsal margin of parameres strongly curved apically genus 'R'
- T7 variable, if rounded apically, then either strongly convex, or S8 trispinose; anterior margin of pronotum not produced laterally; dorsal margin of parameres usually not strongly curved apically 7
- 7(6) T7 apically raised, usually as either convex process delineated by oblique sulci or as pentagonal area (sometimes obscure), without alae or lateral carinae (although posterior margin may be carinate e.g. *R. marginatus* Turner); S8 uni- or trispinose; anterior margin of pronotum usually carinate (Fig. 1); frons at least weakly transversely carinate; dorsal margin of parameres produced or lobed *Rhagigaster* Guérin sensu stricto
- T7 narrowly truncate or rounded apically, not raised, with or without alae; S8 unispinose; anterior margin of pronotum rarely carinate; frons usually not transversely carinate; dorsal margin of parameres not produced 8
- 8(7) Head widened such that face wider than high *Umbothynnus* Brown
- Head not widened, face not wider than high *Rhytidothynnus* Brown
- 9(1) Mesothoracic coxae separated by lamellate bilobed mesosternal process 10
- Mesosternal process absent *Eirone* Westwood
- 10(9) T2 transversely multicarinate; T6 longitudinally rugose or multicarinate *Dimorphothynnus* Turner
- T2 not transversely multicarinate; T6 usually not longitudinally rugose or multicarinate [Rhagigaster sensu Turner] 11
- 11(10) Vertex with pair of punctate depressions, rarely represented by suborbicular areas of deep punctures (with interstices not depressed) but then T6 notched and frons with yellow maculae 12
- Vertex without punctate depressions; if frons with yellow maculae then T6 not notched 13
- 12(11) Frons deeply punctate, without underlying reticulation; postgena not shortened *Curvothynnus* Brown gen. nov.
- Frons with or without deep punctures, finely reticulate; postgenae short genus 'Z'
- 13(11) Head and body deeply longitudinally rugose-punctate or longitudinally multicarinate; eyes large, strongly convex; frons with yellow maculae, or frons and vertex orange; metasoma concolorous genus 'R'
- Head and body not deeply rugose-punctate, not multicarinate; eyes usually not large, not strongly convex; frons with or without maculae; metasoma concolorous, or apical two segments ferruginous. 14
- 14(13) Longitudinal sulcus (Fig. 3) from inner orbit of eye to near posterior margin of head (absent in *R. cinerellus* Turner, *R. consanguineus* (Turner) and *R. reflexus* Smith then body is smooth and densely setose and dorsal surface of propodeum is quadrate and may be specialised ant parasitoids); frontal maculae usually present *Rhagigaster* Guérin
- Head without such sulci; propodeum not quadrate, longer than wide; frontal maculae absent *Rhytidothynnus* Brown



Fig. 5. Distribution of species of *Curvothynnus*: ▲ = *C. neptunus*, ● = *C. laevigatus*.

***Curvothynnus* gen. nov.**

(Figs 2, 4–23)

Gender masculine. Type species here designated *Rhagigaster laevigatus* Smith, 1897. Recent, Champion Bay, North West Coast, Western Australia.

Included species. *C. laevigatus* (Smith, 1879). comb. nov.; *C. neptunus* (Turner, 1907). comb. nov.

Diagnosis. *Male.* Medium to large thynnine wasps, body length 12–29 mm, head and body sparsely and shallowly punctate, wings black with blue reflections; head with vertex and gena as in Fig. 2; disc of pronotum without transverse preapical groove and anterior margin curved forward that it is directed forward forming a vertically concavity (Fig. 4); and mesoseutellum (Fig. 7) strongly raised above, and slightly projecting over, the metanotum (in profile).

Female. Medium to large, body length 11–21 mm. Vertex with a pair of punctate depressions (Figs 7–8, 17–18); frons not reticulate.

Description. *Male.* Head in profile as in Fig. 2, vertex lengthened (behind eyes), gena mostly hidden ventrally; elypeus raised basally, flattened apically, with weakly developed inverted V-shaped earina, apical margin truncate to weakly emarginated (Fig. 9); antennae short, not reaching propodeum, segments less than 2x longer than wide, apical segments arcuate; antennal prominence broadly U-shaped, raised, not carinate; transverse frontal carina absent; pronotum weakly laterally produced, anterior margin carinate, procurved and directed anteriorly such that anterior surface is concave (Fig. 4); mesoseutellum angulate in profile near metanotum (Fig. 7); mesosternum with transverse anteroventral earina that is less well developed laterally and strongly emarginated medially; propodeum angulate in profile (Fig. 7) with dorsal and posterior surfaces



Figs 6–9. *Curvothynnus laevigatus*, male: 6, apex of abdomen, lateral; 7, mesoseutellum projecting above propodeum, lateral (a = mesoseutellum, b = propodeum, c = T1); 8, habitus; 9, front of head. Scale lines: 6, 7, 9 = 1 mm; 8 = 2 mm.



Figs 10, 11. *Curvothynnus laevigatus*, female: 10, habitus; 11, head and pronotum. Scale lines: 10 = 1 cm; 11 = 0.5 mm.

delineated; 2m-cu received distal in 1r-m on M by distance less than half length of 1r-m; metasoma elongate fusiform; T1 angulate in profile, wider than long; S1 wider than long, medially raised; T7 convex, apex at least weakly produced, rounded and raised; S8 concave dorsally, with strongly developed upwardly curved apical spine (Fig. 6), basal angles spinose or angulate; paramere-basiparamere suture distinct; parameres without internal brush of setae; parapenal lobes and digitus absent (Figs 14–17).

Colour. Head and body black; wings black with violet reflections.

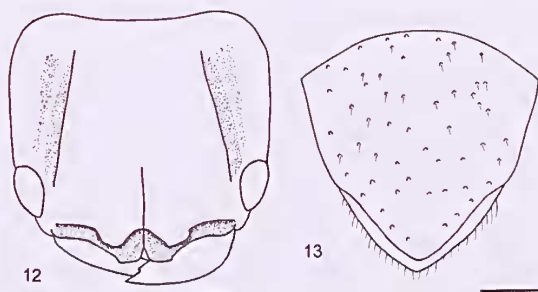
Female. Clypeus raised medially, with inverted Y-shaped carina, apical margin emarginate; mandibles bidentate; maxillary palps 6-segmented; labial palps 4-segmented; frons not reticulate; head with punctate depressions posterior to eyes (Figs 11–12, 21–22); head subrectangular; pronotum weakly convex, not tuberculate, not sulcate; dorsal surface of propodeum almost as long as, or longer than, wide; T1 anteriorly truncate, anterior angles not subtuberculate; T5 and S5 not tuberculate; T6 sub-triangular (Fig. 13) or subparallel (Fig. 23), punctate to closely punctate.

Colour. Head and body dark brown to black.

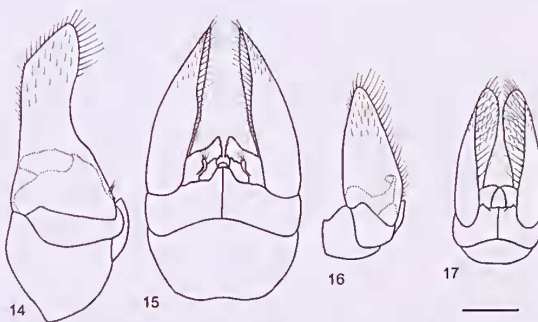
Distribution. Northern and north-eastern Australia, not inland (Fig. 5).

Remarks. The orientation of the eye relative to the posteroventral margin of the head and the shape of the pronotum and mesoseutellum in the male are unique and diagnostic within the tribe. Other characters that distinguish this genus from *Rhagigaster* include the frons being without transverse carina such that the head is evenly curved in profile from the vertex to the clypeus; the clypeus is triangularly flattened and polished rather than convex, carinate and punctate; mesosternum with transverse anteroventral carina that is less well developed laterally and strongly emarginated medially rather than not carinate or emarginate; S1 wider than long rather than vice versa and S8 without a preapical spine on the dorsal margin (viewed in profile). [The latter is a lateral expansion of the sternite that closes the genital cavity ventrally.]

Females are distinguished by the presence of a pair of broad setiferously punctate depressions that run longitudinally from the frons to the vertex. These paired depressions are unique to this genus and undescribed genus “Z”. *Curvothynnus* is also close to *Rhagigaster*; but the



Figs 12–13. *Curvothynnus laevigatus*, female: 12, head; 13, T6 (and posterior margin of S7). Scale lines = 0.5 mm.



Figs 14–17. *Curvothynnus* spp., male genitalia: 14, *C. laevigatus*, lateral; 15, *C. laevigatus*, dorsal; 16, *C. neptunus*, lateral; 17, *C. neptunus*, dorsal. Scale line = 0.5 mm.

latter has a longitudinal setiferously punctate line from the inner margin of the eye near the top posteriorly to almost the posterior margin of the head.

Etymology. The generic name is derived from the Latin *curvus* and is a reference to the anterior margin of the pronotum of the male which is bent forward.

Key to species of *Curvothynnus*

Male

- 1 S8 without lateral spines; T7 apically rounded; paracuspis present (Figs 14–15); body length greater than 20 mm *C. laevigatus* (Smith)
- S8 with lateral spines; T7 apically truncate; paracuspis absent (Figs 16–17); body length less than 20 mm ..
..... *C. neptunus* (Turner)

Female

- 1 Depressions on vertex broad and long (Figs 11–12); head and thorax rugose-punctate; body length greater than 15 mm *C. laevigatus* (Smith)
- Depression on vertex short, narrow and lunulate; head and thorax punctate (Figs 21–22); body length less than 15 mm *C. neptunus* (Turner)

Curvothyunnus laevigatus (Smith) comb. nov.

(Figs 2, 4, 5–15)

Rhagigaster laevigatus Smith, 1879: 176. Turner 1907: 226; Kimsey & Brown 1993: 321 (lectotype designation).*Thynnus levigatus* Dalla Torre, 1897: 110.**Material examined.** LECTOTYPE: BMNH, ♂, Champion Bay, North West Coast, Western Australia. PARALECTOTYPE: BMNH, 1♀, same data as lectotype.**Additional (non-type) material examined.** WESTERN AUSTRALIA: WADA, 1♂, Kimberley Research Station near Kununurra, 4 March 1961, K.T. Richards; WADA, 1♀, Kimberley Research Station near Kununurra, 15 April 1962, K.T. Richards; UQIC, 1♂, 1♀, Black Rock, 12 miles north of Kununurra, on *Eucalyptus ?pruinosa*, 6 March 1973, E.M. Exley. NORTHERN TERRITORY: ANIC, 1♂, 11°1'S, 136°45'E, Rimbija Island, Wessel Islands, 17 Feb. 1977, R.A. Barrett; MV, 2♂, 1♀, Borroloola, 26 January–2 February 1912, G.F. Hill. QUEENSLAND: QM, 1♂, 1♀, Weipa, 3–5 February 1976, G.B. Monteith; MV, 1♂, Banks Island, Torres Strait, 1 June 1969, A. Neboiss; NSW, 1♂, Cape York, Fauvel; NSW, 1♂, Cape York, 1907; ANIC, 2♂, 1♀, Cape York, 1909, H. Elgner; ANIC, 2♂, Cape York, 1906, H. Elgner; MV, 1♂, Westwood, 31 December 1923, A.N. Burns; AM, 1♂, Westwood, 20 November 1978, R. Eastwood; ANIC, 3♂, 1♀, De Saily Range 63 miles north of Mareeba, 25 January 1973, J.G. Brooks; UQIC, 1♂, 1♀, Dimbulah, February 1961, I.C. Cunningham; QDPI, 1♂, 1♀, Dimbulah, February 1965; QDPI, QM 3♂, Townsville, 14–17 January 1900, F.P. Dodd; ANIC, 1♂, Townsville, January 1901, F.P. Dodd; AM, 1♂, Mackay, 1947, A. Marriage; ANIC, 1♂, Rockhampton, May 1911, H. Brown; ANIC, 1♂, Mount Walsh National Park, Biggenden, 9 January 1973, H. Frauca; QDPI, 1♂, Yinyarandi, 2 January 1936.**Redescription of male.** Body (Fig. 8) length 21–29 mm; fore wing 13–20 mm; hind wing 11–14. Head (Fig. 9) rounded, not emarginate posteriorly, produced and subparallel behind eyes; mandibles bidentate, not tuberculate; clypeus truncate, weakly convex, with obscure inverted V-shaped carina, branches broad, clypeus punctate laterally, sparsely punctate medially; antennal prominence broadly U-shaped, not carinate, projecting to antennal insertion; frons not transversely carinate, sparsely punctate, medially sulcate on lower half; vertex and gena sparsely punctate. Pronotum as wide as head, sparsely punctate, anterior margin strongly emarginate, strongly raised and produced anteriorly, carinate, not projecting laterally; mesoscutum, tegulae and mesoscutellum sparsely and shallowly punctate; mesoscutellum strongly convex, weakly medially carinate, triangular; metanotum sparsely punctate, below level of mesoscutellum; propodeum (Fig. 7) obliquely truncate posteriorly, not transversely carinate, sparsely punctate anteriorly, finely transversely punctate posteriorly; fore coxae punctate; mesopleura finely punctate. Metasoma elongate fusiform; T1–6 impunctate with at most single line of subapical punctures; S1–7 punctate; gradulus straight and

shallow, impunctate in T2, scrobiculate on T3–6 and S3–4, punctate and obscure on S5–6, absent on S7. T1 truncate anteriorly, not tuberculate; S1 weakly and broadly raised, anterior V-shaped carina weakly produced ventrally; S2 anteromedially subtuberculate; T7 rounded posteriorly; S8 with strongly angulate basal angles; genitalia as in Figs 14–15, cuspis weakly hooked; paracuspis of medium length.

Colour. Black; wings black with violet reflections.

Redescription of female. Body (Fig. 10) length 17–21 mm. Head (Figs 11–12) subrectangular, posterior angles rounded; clypeus narrowly emarginate with inverted Y-shaped carina; frons longitudinally rugose-punctate, medially sulcate; depression behind eye broad, inner margin straight, outer margin indistinct, densely setose; vertex rugose-punctate, not medially depressed; gena rugose-punctate; eyes large, elliptical; mandibles weakly bidentate. Pronotum flat, weakly depressed near posterior angles, anterior angles not produced, rugose-punctate; mesoscutellum weakly convex, weakly narrowed posteriorly; propodeum weakly convex, not laterally depressed, truncate posteriorly, not densely setose, rugose-punctate dorsally, impunctate laterally with closely punctate dorsal margin, closely and finely punctate posteriorly. Metasoma with T1–5 and S1–5 punctate; T1 truncate, anterior angles rounded; T5 and S5 not produced; T6 (Fig. 13) subtriangular, not spinose, longitudinally rugose-punctate.

Colour. Dark ferruginous to black.

Distribution. Coast, coastal ranges and adjacent islands of northern and north-eastern Australia from Wyndham, Western Australia, to Biggenden, Queensland (Fig. 5). Most records are south of about 16°S with the exception of Weipa on the Queensland coast of the Gulf of Carpentaria. The record for Geraldton, Western Australia, is much further south (and west) from all others and needs to be confirmed.**Remarks.** Turner (1907) considered this species rare. While it is not common, there are now over 30 specimens in collections.*Curvothyunnus laevigatus* is the largest known species in the *Rhagigasterini*.*Curvothyunnus neptunus* (Turner) comb. nov.

(Figs 5, 9, 20–27)

Rhagigaster neptunus Turner, 1907: 227.**Type Material.** HOLOTYPE: OUM, ♂, Port Essington, Northern Territory.**Additional (non-type) material examined.** NORTHERN TERRITORY: NTM, 1♂, Adelaide River, 13°14'S, 131°06'E, January 1996, G. Dally; NTM, 1♂, Adelaide River, 13°14'S, 131°06'E, 20 December 1995, G.R. Brown & G. Dally; ANIC, NTM, 8♂, 6♀, Brocks Creek, Burnside, 18–22 Apr. 1929, T.G. Campbell; QDPI, QM, 2♂, Darwin, G.F. Hill; NTM, 1♂, Virginia nr Darwin, 12°33'S 131°02'E, 29 October 1996 S.M. Gregg; NTM 93–117, 1♂, Kapalga Research Station, Kakadu National Park, eucalypt woodland malaise trap, 11–25 December 1993, S. & J. Peck; NTM, 2♂, East Alligator Ranger Station,



Figs 18–19. *C. neptunus*, male: 18, habitus; 19, Front of head. Scale line: 18 = 1 cm; 19 = 0.3 mm.



Figs 20–21. *Curvothynnus neptunus*, female: 20, habitus; 21, head. Scale line: 20 = 0.8 mm; 23 = 0.5 mm.

Kakadu National Park, 12°26'S, 132°57'E, 11 March 2006, A. Young; NTM, 1♂, East Alligator Ranger Station, Kakadu National Park, 12°26'S, 132°57'E, 8 March 2006, A. Young. QUEENSLAND: QM, 4♂, 1♀, Cairns district, F.P. Dodd.

Redescription of male. Body (Fig. 18) length 12–16 mm; fore wing 9–12 mm; hind wing 7–10 mm. Head (Fig. 19) rounded, not emarginate posteriorly, produced and subparallel behind eyes; mandibles bidentate, not tuberculate; clypeus weakly emarginate, raised with flat triangular area depressed near apex bounded by obscure inverted V-shaped carina, clypeus closely and finely punctate laterally, sparsely punctate medially; antennal prominence broadly U-shaped, not carinate, produced to antennal insertions; frons not transversely carinate, sparsely punctate with narrow closely punctate band on inner orbit of eye, sagittally sulcate to near mid ocellus, not depressed; vertex and gena sparsely punctate. Pronotum as wide as head, sparsely punctate, anterior margin strongly emarginate, strongly raised and produced anteriorly, carinate, weakly projecting laterally; mesoscutum sparsely punctate; tegulae sparsely punctate; mesoscutellum impunctate, flat, narrowly triangular; metanotum impunctate medially,

closely punctate laterally, below level of mesoscutellum; propodeum obliquely truncate, weakly transversely carinate above truncation, sparsely punctate anteriorly, finely transversely rugose-punctate posteriorly; fore coxae sparsely punctate; mesopleura punctate. Metasoma elongate fusiform; T1–5 sparsely punctate, impunctate posteriorly, T6 punctate; S1–7 closely punctate; gradulus weakly curved and weakly serotuberculate on T1–6, weakly curved, oblique and discontinuous medially on S3–7; T1 obliquely truncate anteriorly, not tuberculate; S1 medially raised and carinate, anterior V-shaped carina strongly produced and blade-like ventrally; S2 anteromedially subtuberculate; T7 truncate and weakly raised posteriorly; S8 with spinose basal angles; genitalia as in Figs 16–17, cuspis short and incurved; paracuspis absent.

Colour. Black; wings black with violet reflections.

Description of female. Body (Fig. 20) length 11 mm. Head (Figs 21–22) subrectangular, posterior angles rounded; clypeus emarginate, with an inverted Y-shaped carina; frons closely punctate, medially sulcate; depression behind eye narrow, curved, inner and outer margins sharply defined, densely setose; vertex sparsely punctate, not medially depressed; gena closely and deeply punctate; eyes elliptical; mandibles bidentate. Pronotum weakly convex, weakly depressed near posterior angles, anterior angles not produced, punctate; mesoscutellum weakly convex, weakly narrowed posteriorly, punctate; propodeum weakly convex, not laterally depressed, emarginate posteriorly, not densely setose, closely punctate dorsally, closely and finely punctate laterally and posteriorly. Metasoma with T1–5 and S1–5 closely punctate; T1 truncate, anterior angles rounded; T5 and S5 not produced; T6 (Fig. 23) subparallel, not spinose, longitudinally rugose-punctate.

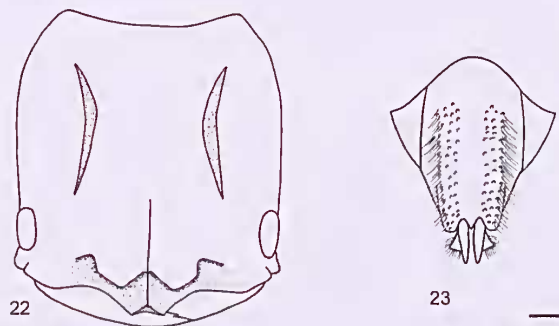
Colour. Head (except mandibles) and body dark brown; mandibles and legs brownish orange.

Distribution. Coastal northern Australia from Darwin, Northern Territory, to Cairns, Queensland (Fig. 5). Most records are north of 14°S with the Queensland specimen from the Cairns district being three degrees further south.

Remarks. The female has not previously been described.

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Figs 22–23. *Curvothynnus neptunus*, female: 22, head; 23, T6 (and posterolateral margins of S6). Scale line = 0.5 mm.

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